

1 **Remarks for the “Response to Non-Final Office Action**
2 **dated June, 5, 2006”**

3 Applicant respectfully requests reconsideration and allowance of all of the
4 claims of the application. Claims 1-28, 34-42, and 45-46 are presently pending.
5 Claims amended herein are 1, 13, 34, 40, and 45. Claims withdrawn or cancelled
6 herein are 29-33. New claims added herein are none.

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8 **Formal Request for an Interview**

9 If the Office’s response to this communication is anything other than
10 allowance of all pending claims, then Applicant formally requests an interview
11 with the Examiner of the present patent application. Applicant asks the Examiner
12 to call and/or email the undersigned attorney for the Applicant to schedule a
13 convenient date and time for a telephone interview. The undersigned attorney is
14 on the west coast; therefore he is typically available about 12pm until 7pm
15 (Eastern Time) from Monday through Friday.

16
17 **Claim Interpretation**

18 On pp. 2-3 of the Action, the Office explained that because it gives the
19 “broadest reasonable interpretation” in light of the supporting disclosure, that the
20 Office interprets the “kernel emulator” as either software or hardware or both.

21 To clarify, Applicant has amended all of the pending independent claims
22 (except for claim 29) to clarify that the term “kernel emulator” is restricted to
23 software implementations. See the claims for the specific clarifying language
24 used.
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Substantive Claim Rejections

Claim Rejections under §§ 102 and 103

The Office rejects all of the pending claims (1-28, 34-42, and 45-46) under §102 and/or §103. For the reasons set forth below, the Office has not shown that one or more of the cited references anticipate the rejected claims. For the reasons set forth below, the Office has not made a *prima facie* case showing that the rejected claims are obvious (under §103). Accordingly, Applicant respectfully requests that the rejections be withdrawn and the case be passed along to issuance.

The Office's rejections are based upon the following references:

- **Scalzi:** *Scalzi et al.*, US Patent No. 5,560,013 (issued 9/24/1996);
- **Franz:** Michael Franz, "Emulating an Operating System on Top of Another" Software – Practice and Experience. Vol. 23, No. 6, June 1993, pp. 677-692);
- **Duvall:** *Duvall et al.*, US Patent No. 4,742,447 (issued 5/3/1988);
- **McCoy:** *McCoy et al.*, US Patent No. 5,036,484 (issued 7/30/1991).

Overview of the Application

The Application describes a technology facilitating the operation of non-native program modules within a native computing platform. More particularly, it describes a technology facilitating the interoperability of native and non-native program modules within a native computing platform.

Specifically, this technology involves an emulation of the kernel of the non-native operating system. Instead of interacting with the native kernel of the native computing platform, the non-native program modules interact with a non-native

1 kernel emulator. This emulator handles the necessary conversions and translations.
2 With this non-native kernel emulation, native and non-native program modules are
3 interoperable. Except for the kernel emulator, none of the program module (native
4 or non-native) and none of the other portions of the native computing platform are
5 aware of the emulation. The computing environment and other program modules
6 appear to be non-native to the non-native program modules. Likewise, the non-
7 native program modules appear to be native to the computing environment and the
8 native program modules.

10 Cited References

11 The Office cites **Scalzi** as its reference for is anticipation-based rejections
12 and the primary references in many of its obviousness-based rejections. The
13 Office cites **Duvall** as its primary reference for some of its obviousness rejections
14 and a secondary reference in other obviousness-based rejections. In addition, the
15 Office cites **Franz** and **McCoy** as secondary references in some of its
16 obviousness-based rejections.

18 Scalzi

19 **Scalzi** describes a method of utilizing large virtual addressing in a target
20 computer to implement an instruction set translator (IST) for dynamically
21 translating the machine language instructions of an alien source computer into a
22 set of functionally equivalent target computer machine language instructions,
23 providing in the target machine, an execution environment for source machine
24 operating systems, application subsystems, and applications.
25

1 The target system provides a unique pointer table in target virtual address
2 space that connects each source program instruction in the multiple source virtual
3 address spaces to a target instruction translation which emulates the function of
4 that source instruction in the target system. The target system stores the translated
5 executable source programs by actually storing only one copy of any source
6 program, regardless of the number of source address spaces in which the source
7 program exists.

8 The target system manages dynamic changes in the source machine storage,
9 accommodating the nature of a preemptive, multitasking source operating system.
10 The target system preserves the security and data integrity for the source programs
11 on a par with their security and data integrity obtainable when executing in source
12 processors (i.e., having the source architecture as their native architecture). The
13 target computer execution maintains source-architected logical separations
14 between programs and data executing in different source address spaces--without a
15 need for the target system to be aware of the source virtual address spaces.

16
17 Duvall

18 **Duvall** describes a method for accessing information in a page segmented
19 virtual memory data processing system in which virtual machines running UNIX
20 type operating systems are concurrently established, and in which a memory
21 manager controls the transfer of information between primary and secondary
22 storage devices in response to the occurrence of page faults. The method
23 establishes a plurality of data structures in a dynamic manner in response to a
24 Supervisor call to "map" a file.
25

The mapping process assigns a new segment of virtual memory to the mapped file and correlates, in one data structure, the virtual address of each page of data in the new segment to a disk file address where that page is actually stored. A UNIX system call by an application program for a specific virtual page is handled by the page fault hanger, and not the UNIX kernel, since the application can supply the real address of the page on the disk file from the data structure that was created by the mapped page range Supervisor call. Simple load and store type of instructions are employed for the data transfer, which avoids much of the overhead that normally accompanies conventional UNIX read and write system calls to the storage subsystem.

Franz

As its name implies, **Franz** discusses the emulation of one operating system on top of another operating system. **Franz** describes the design of an operating-system emulator. This software interface provides the services of one operating system (e.g., Oberon) on a machine running a different operating system (e.g., Macintosh), by mapping the functions of the first onto equivalent calls to the second.

McCoy

McCoy describes a system for emulating the operation of a terminal connected to a host computing system while retaining the ability to utilize personal computer application programs resident in the personal computer by utilizing a personal computer/host terminal emulation program which conducts an analysis of

1 host data and keystrokes to identify personal computer commands and calls the
2 appropriate resident application program in response to such commands.
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Anticipation Rejections

Anticipation Rejections Based upon Scalzi

The Office rejects claims 1, 3-6, 9-13, 15-17, 19-28, 34, 37-40, 42, and 45-46 under USC § 102(b) as being anticipated by **Scalzi**. Applicant respectfully traverses the rejections of these claims. Based on the reasons given below, Applicant asks the Office to withdraw its rejections of these claims.

Claims 1, 3, 4, 13, 15, 16, 34, 40, and 45

In the Action (pp.15-16), the Office equates **Scalzi's** disclosures to the target subject matter of these claims: "kernel of the operating system." Applicant submits that the kernel-as-software amendment herein helps clarify the claim and distinguishes the claims from **Scalzi**.

In addition, the Office indicates the **Scalzi** does disclose kernel calls and kernel emulation. Applicant submits, however, that **Scalzi** defines binary translation, which it is a technique for automatically converting the machine instructions—instruction by instruction—of one computing platform to those of another. Such a translation involves "machine instructions" and not kernel calls.

To use a metaphor of an automobile, machine-instruction translation (of **Scalzi**) is akin to replacing the "nuts & bolts" of a car for different sized "nuts & bolts." However, the kernel call and kernel emulation (of one or more claims of the present application) is akin to replacing the V-6 internal combustion gasoline-fueled engine with a V-8 diesel-fueled engine in the pick-up truck. With both instances, the "nuts & bolts" are replaced, but, with the latter, the entire engine is

1 replaced. This metaphor was selected because the kernel is effectively the
2 “engine” of the operating system.

3 These rejected claims recite kernel emulation¹ and operating on or in
4 response to kernel calls. To use the metaphor, they focus on the “engine” as a
5 whole and not just its “nuts & bolts.” As defined in the claims, a kernel is
6 software alone. Applicant submits that while **Scalzi** does appear to disclose
7 instructions conversion, it fails to disclose kernel emulation, kernel calls, and
8 interception of such kernel calls.

9 On p.16 of the Action, the Office indicates that machine instruction
10 translation is inherent in “the nature of events between the native and non-native
11 functions.” Just like it seems reasonable that the “nuts & bolts” of an engine
12 would be replaced when the engine itself is replace, it seems reasonable to assume
13 at least some machine-instruction translation may occur when emulating the
14 “engine” (aka, “kernel”) of the operating system. Applicant respectfully submits
15 that merely disclosing machine-instruction translation (as **Scalzi** does) does not
16 amount to kernel emulation or interception of kernel calls (as recited in the claims
17 of the present application).

18 As shown above and in previously submitted responses, **Scalzi** does not
19 disclose all of the claimed elements and features of these claims. Accordingly,
20 Applicant asks the Office to withdraw its rejection of these claims.
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25 ¹ E.g., “kernel emulator” in claims 1, 40 and 45, “emulating a kernel” in claim 13, and “emulating
a non-native kernel” in claim 34

Claims 2-12

These claims ultimately depend upon independent claim 1. As discussed above, claim 1 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Moreover, Applicant submits that **Scalzi** discloses conversion of a "machine" instruction and that is not equivalent to translation of kernel calls.

Claims 14-28

These claims ultimately depend upon independent claim 13. As discussed above, claim 13 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Claims 35-39

These claims ultimately depend upon independent claim 34. As discussed above, claim 34 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the

1 Office withdraw the rejection of each of these dependent claims because its base
2 claim is allowable.

4 Claims 41 and 42

5 These claims ultimately depend upon independent claim 40. As discussed
6 above, claim 40 is allowable.

7 In addition to its own merits, each of these dependent claims is allowable
8 for the same reasons that its base claim is allowable. Applicant submits that the
9 Office withdraw the rejection of each of these dependent claims because its base
10 claim is allowable.

12 Claim 46

13 This claim ultimately depends upon independent claim 45. As discussed
14 above, claim 45 is allowable.

15 In addition to its own merits, this dependent claim is allowable for the same
16 reasons that its base claim is allowable. Applicant submits that the Office
17 withdraw the rejection of this dependent claim because its base claim is allowable.

Obviousness Rejections

Lack of *Prima Facie* Case of Obviousness (MPEP §§ 706.02 & 2142)

Applicant disagrees with the Office's obviousness rejections. Arguments presented herein point to various aspects of the record to demonstrate that all of the criteria set forth for making a *prima facie* case have not been met.

According to the MPEP §§ 706.02 and 2142, three basic criteria must be met in order to establish a *prima facie* case of obviousness:

- There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.
- There must be a reasonable expectation of success.
- The prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Based upon *Scalzi* (alone)

The Office rejects claims 1-42, 45, and 46 under USC § 103(a) as being unpatentable over *Scalzi* (alone). Applicant respectfully traverses the rejection of this claim. Applicant asks the Office to withdraw its rejection of this claim.

Claims 1, 3, 4, 13, 15, 16, 34, 40, and 45

Applicant may be mistaken, but it appears that the Office has supplies the exact same reasoning—save one bit—as it does for its anticipation rejection of the same claims. If so, then Applicant reiterates its response (given above and in previous responses) to the Office’s anticipation rejections here.

On p. 7 of the Action, the Office added this one bit regarding its obviousness rejection of these claims that was not included in its anticipation rejection of the same claims:

8. Claims 1-42, 45 and 46 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Scalzi et al. (US Patent 5,560,013), (hereafter Scalzi). Scalzi teaches an emulator control program that manages target processors.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the management of dynamic changes within the source machine storage in multitasking source operation of Scalzi because Scalzi teaches a method to improve system performance of linkage to, and data access by, that code (Scalzi: column 4, lines 5-6).

Applicant does not understand the Office’s reasoning here. Applicant asks the Office to be more explicit here in satisfying its burden to establish its *prima facie* case:

- Where does **Scalzi** provide some suggestion or motivation to modify itself to produce that which is recited in the claims?
- Why is there a reasonable expectation of success for that suggested modification?

- 1 • Does Scalzi teach or suggest all the claim limitations? If not, what is
2 missing? How does the Office supply that missing element/feature?

3 As shown above and in previously submitted responses, **Scalzi** does not
4 disclose all of the claimed elements and features of these claims. Furthermore,
5 Applicant submits that the Office has not established its *prima facie* case for
6 obviousness. Accordingly, Applicant asks the Office to withdraw its rejection of
7 these claims.

8
9 Claims 2-12

10 These claims ultimately depend upon independent claim 1. As discussed
11 above, claim 1 is allowable.

12 In addition to its own merits, each of these dependent claims is allowable
13 for the same reasons that its base claim is allowable. Applicant submits that the
14 Office withdraw the rejection of each of these dependent claims because its base
15 claim is allowable.

16 Moreover, Applicant submits that **Scalzi** discloses conversion of a
17 “machine” instruction and that is not equivalent to translation of kernel calls.

18
19 Claims 14-28

20 These claims ultimately depend upon independent claim 13. As discussed
21 above, claim 13 is allowable.

22 In addition to its own merits, each of these dependent claims is allowable
23 for the same reasons that its base claim is allowable. Applicant submits that the
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25

1 Office withdraw the rejection of each of these dependent claims because its base
2 claim is allowable.

3
4 Claims 35-39

5 These claims ultimately depend upon independent claim 34. As discussed
6 above, claim 34 is allowable.

7 In addition to its own merits, each of these dependent claims is allowable
8 for the same reasons that its base claim is allowable. Applicant submits that the
9 Office withdraw the rejection of each of these dependent claims because its base
10 claim is allowable.

11
12 Claims 41 and 42

13 These claims ultimately depend upon independent claim 40. As discussed
14 above, claim 40 is allowable.

15 In addition to its own merits, each of these dependent claims is allowable
16 for the same reasons that its base claim is allowable. Applicant submits that the
17 Office withdraw the rejection of each of these dependent claims because its base
18 claim is allowable.

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20 Claim 46

21 This claim ultimately depends upon independent claim 45. As discussed
22 above, claim 45 is allowable.

In addition to its own merits, this dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of this dependent claim because its base claim is allowable.

Based upon Scalzi and Franz

The Office rejects claims 2 and 14 under USC § 103(a) as being unpatentable over **Scalzi** in view of **Franz**. Applicant respectfully traverses the rejection of this claim. Applicant asks the Office to withdraw its rejection of this claim.

Claims 2 and 14

Claim 2 ultimately depends upon independent claim 1. As discussed above, claim 1 is allowable. Claim 14 ultimately depends upon independent claim 13. As discussed above, claim 13 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Based upon Scalzi and Duvall

The Office rejects claims 7, 8, 18, 35, and 41 under USC § 103(a) as being unpatentable over **Scalzi** in view of **Duvall**. Applicant respectfully traverses the rejection of this claim. Applicant asks the Office to withdraw its rejection of this claim.

Claims 7, 8, 18, 35, and 41

Claims 7 and 8 ultimately depend upon independent claim 1. As discussed above, claim 1 is allowable. Claim 18 ultimately depends upon independent claim 13. As discussed above, claim 13 is allowable. Claim 35 ultimately depends upon independent claim 34. As discussed above, claim 34 is allowable. Claim 41 ultimately depends upon independent claim 40. As discussed above, claim 40 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Based upon Duvall and McCoy

The Office rejects claims 29-33 under USC § 103(a) as being unpatentable over **Duvall** in view of **McCoy**. Applicant respectfully traverses the rejection of this claim.

However, to speed along the other pending claims to issuance, Applicant withdraws—without prejudice—claims 29-33 from consideration herein. Applicant reserves the right to reintroduce these claims at a later time in a offspring case.

1 **Dependent Claims**

2 In addition to its own merits, each dependent claim is allowable for the
3 same reasons that its base claim is allowable. Applicant submits that the Office
4 withdraw the rejection of each dependent claim where its base claim is allowable.
5

6 **Conclusion**

7 All pending claims are in condition for allowance. Applicant respectfully
8 requests reconsideration and prompt issuance of the application. If any issues
9 remain that prevent issuance of this application, the Office is urged to contact the
10 undersigned attorney before issuing a subsequent Action.
11

12 Respectfully Submitted,

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14 Dated: 9.5.06

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